Table 7: **Integrase**

	MAb ID	HXB2 Location	Author's Location	Sequence	Neutralizing	Immunogen	Species (Isotype)
189	1C4	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Haugan (1995), Nilsen (1996)]

- 1C4: MAb interferes with integrase binding to DNA [Haugan (1995)]
- 1C4: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

190	2C11	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Nilsen (1996)]

- 2C11: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

191	2E3	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Nilsen (1996), Ovod (1992)]

- 2E3: There are two MAbs called 2E3 – the other one binds to Nef [Ovod (1992)]
- 2E3: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

192	3E11	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Otteken (1992), Nilsen (1996)]

- 3E11: There is another MAb with this ID that recognizes p17 [Otteken (1992)]
- 3E11: Recognized an epitope present on HIV-2/SIVmac, SIVagm, HIV-1, and SIVmnd [Otteken (1992)]
- 3E11: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

193	3F9	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Nilsen (1996)]

- 3F9: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

194	5F8	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Haugan (1995), Nilsen (1996)]

- 5F8: There is another MAb with this ID that recognizes and unknown protein in HIV [Pinter (1995)]
- 5F8: MAb interferes with integrase binding to DNA [Haugan (1995)]
- 5F8: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

195	6G5	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Nilsen (1996)]

- 6G5: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

196	7B6	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Nilsen (1996)]

- 7B6: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

197	7C6	Integrase(1–16)	Integrase(1–16 HXB2)	FLDGIDKAQDEHEKYH	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Nilsen (1996)]

- 7C6: One of a large set of MAbs that interact with the N-terminal part of integrase: 1C4, 2C11, 2E3, 3E11, 3F9, 5F8, 6G5, 7B6, 7C6 – these MAbs inhibit end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

198	6C5	Integrase(17–38)	Integrase(17–38 HXB2)	SNWRAMASDFNLPPVVAKEIV-A	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Haugan (1995), Nilsen (1996)]

- 6C5: MAb interferes with integrase binding to DNA [Haugan (1995)]
- 6C5: This MAb inhibits end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

199	4D6	Integrase(42–55)	Integrase(42–55 HXB2)	KCQLKGEAMHGQVD	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: N-term **References:** [Haugan (1995), Nilsen (1996)]

- 4D6: MAb interferes with integrase binding to DNA [Haugan (1995)]
- 4D6: This MAb inhibits end processing and DNA joining, and reduces reintegration activity [Nilsen (1996)]

200	7–16 (7–19)	Integrase(50–159)	Integrase(50–159 HXB2)		no	Vaccine	murine(IgG2b)

Vaccine: *Vector/type:* chimeric maltose binding protein (MBP) *Strain:* IIIB *HIV component:* Integrase

Ab type: Integrase catalytic core **Donor:** Yoshihiro Kitamura, Div of Mol Genetics, Nat Inst of Infectious Diseases, Musashimurayama, Japan
References: [Ishikawa (1999)]

- 7–16: Binds to the central catalytic domain – the paper seems to sometimes call this antibody 7–16, sometimes 7–19, a possible typo [Ishikawa (1999)]

201	4F6	Integrase(56–102)	Integrase(56–102 HXB2)	CSPGIWQLDCTHLEGKVILV-AVHVASGYIEAEVIPAETGQE-TAYFLL	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: Integrase catalytic core **References:** [Haugan (1995), Nilsen (1996)]

- 4F6: MAb binding had minimal effects on Integrase *in vitro* activities [Nilsen (1996)]
- 4F6: MAb interferes with integrase binding to DNA [Haugan (1995)]

202	8G4	Integrase(dis 22–31 + 82–101)	Integrase(dis 12–42 HXB2)	MASDFNLPPV + GYIEAEVI-PAETGQETAYFI?	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

References: [Haugan (1995), Nilsen (1996)]

- 8G4: This MAb reacted strongly with peptides IN(12–31) and IN(22–42), and less strongly with peptide IN(82–101) – it did not react with a deletion mutant of positions 17–38 – this MAb inhibits end processing and DNA joining, but had little effect on integration activities [Nilsen (1996)]

- 8G4: MAb interferes with integrase binding to DNA [Haugan (1995)]

203	anti-K159	Integrase(151–163)	Integrase(163–175)	VESMNKELKKIIG		Vaccine	rabbit(IgG)

Vaccine: *Vector/type:* peptide *HIV component:* Integrase

References: [Maroun (1999)]

- anti-K159: Both the peptide K159, SQGVVESMNKELKKIIGQVRDQAEHLKTA, and the Abs raised against this peptide inhibit Integrase activity – K159 was found to fulfill condition of minimal number of helical heptads to achieve the formation of a stable coiled-coil structure – Integrase is proposed to function as a dimer interacting in this region [Maroun (1999)]

204	5D9	Integrase(186–250)	Integrase(186–250 HXB2)		no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

Ab type: Integrase DNA binding domain **References:** [Nilsen (1996)]

- 5D9: MAb binding had minimal effects on Integrase *in vitro* activities [Nilsen (1996)]
- 5D9: While C-term and N-term anti-Integrase MAbs interfere with Integrase-DNA binding, 5D9 which binds more centrally, does not [Haugan (1995)]

205	8–6	Integrase(211–227)	Integrase(211–227 HXB2)	KELQKQITKIQNFRVYY	no	Vaccine	murine(IgG1)

Vaccine: *Vector/type:* chimeric maltose binding protein (MBP) *Strain:* IIIB *HIV component:* Integrase

Donor: Yoshihiro Kitamura, Div of Mol Genetics, Nat Inst of Infectious Diseases, Musashimurayama, Japan
References: [Ishikawa (1999)]

- 8–6: Antibody binds proximal to the DNA binding region [Ishikawa (1999)]

206	19 (2–19, scAb2–19)	Integrase(228–236)	Integrase(228–236 LAI)	RDSRNPLWK	no	Vaccine	murine(IgG1)

Vaccine: *Vector/type:* recombinant protein *HIV component:* Integrase

Ab type: Integrase **References:** [Bizub-Bender (1994), Levy-Mintz (1996), Kitamura (1999)]

- 19: BALBc mice were immunized with rec integrase, hybridomas expressing anti-integrase Abs were generated, and the antibodies characterized – 19 has a low binding affinity [Bizub-Bender (1994)]
- 19: Called 2–19, scAb2–19 is a single-chain Ab made from MAb 2–19 –acts intra-cellularly to block infection at low MOI by binding to integrase – scAb interfered with the folding of Gag-Pol polyprotein, the Ab did not affect viral production in LAI transfected cells, but the virus produced was less infectious – authors suggest that the epitope may be conformational [Kitamura (1999)]

207	2–19	Integrase(228–236)	Integrase(228–236 HXB2)	RDSRNPLWK	no	Vaccine	murine(IgG2b)

Vaccine: *Vector/type:* chimeric maltose binding protein (MBP) *Strain:* IIIB *HIV component:* Integrase

Ab type: Integrase DNA binding domain **Donor:** Yoshihiro Kitamura, Div of Mol Genetics, Nat Inst of Infectious Diseases, Musashimurayama, Japan
References: [Ishikawa (1999)]

- 2–19: MAb inhibits RT-Integrase interaction, and the terminal cleavage and strand transfer functions of Integrase, but not the disintegration activity [Ishikawa (1999)]

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208 8–22 Integrase(237–252) Integrase(237–252 HXB2) GPAKLLWKGEGAVVIQ no Vaccine murine(IgG1)

Vaccine: *Vector/type:* chimeric maltose binding protein (MBP) *Strain:* IIIB *HIV component:* Integrase

Ab type: Integrase DNA binding domain **Donor:** Yoshihiro Kitamura, Div of Mol Genetics, Nat Inst of Infectious Diseases, Musashimurayama, Japan
References: [Ishikawa (1999)]

- 8–22: MAb inhibits the terminal cleavage and strand transfer functions of Integrase, but not the disintegration activity [Ishikawa (1999)]

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209 4–20 Integrase(253–261) Integrase(253–261 HXB2) DNSDIKVVP no Vaccine murine(IgG1)

Vaccine: *Vector/type:* chimeric maltose binding protein (MBP) *Strain:* IIIB *HIV component:* Integrase

Ab type: Integrase DNA binding domain **Donor:** Yoshihiro Kitamura, Div of Mol Genetics, Nat Inst of Infectious Diseases, Musashimurayama, Japan
References: [Ishikawa (1999)]

- 4–20: Inhibits the terminal cleavage and strand transfer functions of Integrase, but not the disintegration activity [Ishikawa (1999)]

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210 6–19 Integrase(261–270) Integrase(261–270 HXB2) RRKAKIIRD no Vaccine murine(IgG2b)

Vaccine: *Vector/type:* chimeric maltose binding protein (MBP) *Strain:* IIIB *HIV component:* Integrase

Ab type: Integrase DNA binding domain **Donor:** Yoshihiro Kitamura, Div of Mol Genetics, Nat Inst of Infectious Diseases, Musashimurayama, Japan
References: [Ishikawa (1999)]

- 6–19: Inhibits the terminal cleavage and strand transfer functions of Integrase, but not the disintegration activity [Ishikawa (1999)]

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211 7C3 Integrase(262–271) Integrase(262–271 HXB2) RRKAKIIRDY no Vaccine murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

References: [Haugan (1995), Nilsen (1996)]

- 7C3: MAb interferes with integrase binding to DNA [Haugan (1995)]
- 7C3: A set of three MAbs recognize an epitope in this region, 7C3, 7F11, and 8E5 – all three HIV-1 MAbs cross-react with HIV-2 Integrase – these MAbs inhibit end-processing, DNA joining and reintegration, and had little effect on disintegration [Nilsen (1996)]

212	7F11	Integrase(262–271)	Integrase(262–271 HXB2)	RRKAKIIRDY	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

References: [Nilsen (1996), Lasky (1987)]

- 7F11: A set of three MAbs recognize an epitope in this region, 7C3, 7F11, and 8E5 – all three HIV-1 MAbs cross-react with HIV-2 Integrase – these MAbs inhibit end-processing, DNA joining and reintegration, and had little effect on disintegration [Nilsen (1996)]
- 7F11: There is another MAb with this name that binds to gp120 [Lasky (1987)]

213	8E5	Integrase(262–271)	Integrase(262–271 HXB2)	RRKAKIIRDY	no	Vaccine	murine(IgG1κ)

Vaccine: *Vector/type:* recombinant protein *Strain:* HXB2 *HIV component:* Integrase

References: [Haugan (1995), Nilsen (1996)]

- 8E5: MAb interferes with integrase binding to DNA [Haugan (1995)]
- 8E5: A set of three MAbs recognize an epitope in this region, 7C3, 7F11, and 8E5 – all three HIV-1 MAbs cross-react with HIV-2 Integrase – these MAbs inhibit end-processing, DNA joining and reintegration, and had little effect on disintegration [Nilsen (1996)]

214	MAb 35	Integrase(264–273)	Integrase(264–273)	KAKIIRDYGK	no	Vaccine	murine(IgGκ)

Vaccine: *Vector/type:* recombinant protein *HIV component:* Integrase

References: [Barsov (1996), Acel (1998)]

- MAb 35: There appears to be two different Integrase Abs with similar names: MAb 35 and 35 [Barsov (1996), Bizub-Bender (1994)]
- MAb 35: Although MAb 35 does not inhibit HIV-1 IN, Fab 35 inhibits 3'-end processing, strand transfer and disintegration [Barsov (1996)]
- MAb 35: Integrase was shown to have intrinsic DNA polymerase activity that can catalyze gap repair – MAb 35 inhibits this activity [Acel (1998)]
